Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method comprising:

receiving content for transmission from a plurality of transmit antennae, wherein the received content is a vector of input symbols (**s**) of size *Nc* x 1, wherein *Nc* is the number of subcarriers of the multicarrier wireless communication channel; and

generating a rate-one, space-frequency code matrix from the received content for transmission via the plurality of transmit antennae by dividing the vector of input symbols into a number *G* of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number *G* of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of NG subcarrier spacings.

2-3. (Canceled)

4. (Currently Amended) A method according to claim [[3]] 1, further comprising:

dividing each of the pre-coded vectors into a number of *LM* x *1* subvectors; and

creating an M x M diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g,\cdots,\Theta^T_{M\times k}\mathbf{s}_g\}$, where $k=1...L$ from the subvectors.

5. (Original) A method according to claim 4, further comprising:

interleaving the L submatrices from the G groups to generate an M x Nc space-frequency matrix.

6. (Original) A method according to claim 5, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of transmit antenna(s) M, receive antenna(s) N and channel tap(s) L.

7. (Original) A method according to claim 1, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of transmit antenna(s) M, receive antenna(s) N and channel tap(s) L.

8. (Currently Amended) A physical storage medium having stored thereon ~~comprising~~ content which, when executed by an accessing processing ~~communications~~ device causes the processing ~~communications~~ device to cause a communications device to implement a method according to claim 1.

9. (Currently Amended) An apparatus comprising:

a diversity agent to receive content for transmission via a multicarrier wireless communication channel, wherein the received content is a vector of input symbols (**s**) of size *Nc* x 1, wherein *Nc* is the number of subcarriers of the multicarrier wireless communication channel, and to generate a rate-one, space-frequency code matrix from the received content for transmission on the multicarrier wireless communication channel from a plurality of transmit antennae by dividing the vector of input symbols into a number *G* of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number *G* of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of NG subcarrier spacings.

10-11. (Canceled)

12. (Currently Amended) An apparatus according to claim [[11]] 10, the diversity agent further comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the pre-coded vectors into a number of *LM* x *1* subvectors, and to create an *M* x *M* diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g,\cdots,\Theta^T_{M\times k}\mathbf{s}_g\}$, where *k=1...L* from the subvectors.

13. (Original) An apparatus according to claim 12, wherein the space-frequency encoding element interleaves the *L* submatrices from the *G* groups to generate an *M* x *Nc* space-frequency matrix.

14. (Original) An apparatus according to claim 13, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of transmit antenna(s) *M,* receive antenna(s) *N* and channel tap(s) *L*.

15. (Original) An apparatus according to claim 9, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of transmit antenna(s) *M,* receive antenna(s) *N* and channel tap(s) *L*.

16. (Currently Amended) A system comprising:

a number *M* of omnidirectional antennas; and

a diversity agent, to receive content for transmission via a multicarrier wireless communication channel, wherein the received content is a vector of input symbols (**s**) of size *Nc* x 1, wherein *Nc* is the number of subcarriers of the multicarrier wireless communication channel, and to generate a rate-one, space-frequency code matrix from the received content for transmission on the multicarrier wireless communication channel from at least a subset of the *M* omnidirectional antennas by dividing the vector of input symbols into a number *G* of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number *G* of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted

from the same antenna are at a frequency distance that is multiples of NG subcarrier spacings.

17-18. (Canceled)

19. (Currently Amended) A system according to claim [[18]] 16, the diversity agent further comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the pre-coded vectors into a number of *LM* x *1* subvectors, and to create an *M* x *M* diagonal matrix $D_{\mathbf{s}_g,k} = diag\{\Theta^T_{M\times(k-1)+1}\mathbf{s}_g,\cdots,\Theta^T_{M\times k}\mathbf{s}_g\}$, where *k=1...L* from the subvectors.

20. (Original) A system according to claim 19, wherein the space-frequency encoding element interleaves the *L* submatrices from the *G* groups to generate an *M* x *Nc* space-frequency matrix.

21. (Original) A system according to claim 20, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of transmit antenna(s) *M,* receive antenna(s) *N* and channel tap(s) *L*.

22. (Original) A system according to claim 16, wherein the space-frequency matrix provides *M N L* channel diversity, while preserving a code rate of 1 for any number of transmit antenna(s) *M,* receive antenna(s) *N* and channel tap(s) *L*.